


1241190 - R8 SDMS

Third West Weekly Report
Shepherd, Michael

to:

Joyce Ackerman, 'Craig Barnitz (cbarnitz@utah.gov)'

02/21/2012 11:16 AM

Hide Details

From: "Shepherd, Michael" <Michael.Shepherd@PacifiCorp.com>

To: Joyce Ackerman/R8/USEPA/US@EPA, "'Craig Barnitz (cbarnitz@utah.gov)'"
<cbarnitz@utah.gov>

History: This message has been replied to.

7 Attachments



Weekly Report 02-13 to 02-17-12.pdf Third West Weekly Log 2011-07.pdf 229700-1.pdf 229783-1.pdf



229871-1.pdf 229965-1.pdf 230091-1.pdf

Joyce & Craig,

Attached are the reports for the week of February 13, 2012.

All air monitoring results came back negative.

Please let me know if you have any questions.

Thanks,

Mike Shepherd
Project Manager

Rocky Mountain Power - Major Projects

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michael.shepherd@pacificorp.com

3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

DAILY CHECKLIST

DATE: 02/13/11

General

- NA Work area Health and Safety Inspection
- NA Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
- NA Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
- NA Site hazard and safety instruction for all first time employees, contractors or visitors
- NA Complete Employee Meeting Record Form B (where applicable)
- NA Document required Respirator Training completion with Form H
- NA Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
- NA Confirm return of waste material manifest documents for each load with site manager.
- NA Complete all CSHASP Forms (for applicable activities planned for that day)
 - NA Illness/Injury Report Form A
 - NA Site-Specific Training Record Form C
 - NA Hot Work Permit Form D
 - NA Trench/Evacuation Permit Form E
 - NA Combined Space Entry Permit Form F
 - ☒ Exclusion zone operations are practiced as instructed.
 - ☒ Decontamination unit is working properly.
 - ☒ Workers are using decontamination unit as instructed.
 - ☒ Workers use personal protective equipment properly.
 - ☒ Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
 - ☒ Review sign-in/sign-out log throughout and at the end of the workday.
 - ☒ Secure the site at the end of the workday

Sampling

- NA Soil Confirmation sampling for any newly excavated areas
- ☒ Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
- NA Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
- NA Digitally photograph each sample location and at any place field sampling personnel determined necessary

- ☒ Electronically file photo files into the on-site database
- ☒ Complete Field Documentation
 - ☒ Field Sample Data Sheets (FSDS)
 - ☒ Logbook
 - ☒ On-site computer database
- ☒ Label each sample media with a unique number
- ☒ Seal sample(s) in zip lock plastic bags
- ☒ Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
- ☒ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
- ☒ Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
- ☒ Electronically file sample reports into on-site database



3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station

Date: 02/13/12

Location: 3rd West, 1st South, SLC

Job Number: _____

Survey Conducted By: Justin Kargis

Title: _____

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Comments:

Exclusion zone suspended to accommodate for re-aligning fencing and transferring decontamination unit. Newman workers worked around exposed native soil.

CVE fabricators continued forming and preparing for 2nd transformer.

Precipitation from the previous weekend created wet soil conditions so dust was not observed in the yard.

Weather was dry and sunny throughout the day with highs in the 40's.

3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

DAILY CHECKLIST

DATE: 02/14/11

General

NA Work area Health and Safety Inspection

NA Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day

NA Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP

NA Site hazard and safety instruction for all first time employees, contractors or visitors

NA Complete Employee Meeting Record Form B (where applicable)

NA Document required Respirator Training completion with Form H

NA Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.

NA Confirm return of waste material manifest documents for each load with site manager.

NA Complete all CSHASP Forms (for applicable activities planned for that day)

NA Illness/Injury Report Form A

NA Site-Specific Training Record Form C

NA Hot Work Permit Form D

NA Trench/Evacuation Permit Form E

NA Combined Space Entry Permit Form F

☒ Exclusion zone operations are practiced as instructed.

☒ Decontamination unit is working properly.

☒ Workers are using decontamination unit as instructed.

☒ Workers use personal protective equipment properly.

☒ Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.

Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.

☒ Review sign-in/sign-out log throughout and at the end of the workday.

☒ Secure the site at the end of the workday

Sampling

NA Soil Confirmation sampling for any newly excavated areas

☒ Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone

NA Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal

NA Digitally photograph each sample location and at any place field sampling personnel determined necessary

- ☒ Electronically file photo files into the on-site database
- ☒ Complete Field Documentation
 - ☒ Field Sample Data Sheets (FSDS)
 - ☒ Logbook
 - ☒ On-site computer database
- ☒ Label each sample media with a unique number
- ☒ Seal sample(s) in zip lock plastic bags
- ☒ Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
- ☒ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
- ☒ Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
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3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station

Date: 02/13/12

Location: 3rd West, 1st South, SLC

Job Number: _____

Survey Conducted By: Justin Kargis

Title: _____

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

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1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
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1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a 1/2 fire resistance barrier.			x	

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1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
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1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
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Comments:

Exclusion zone suspended to accommodate for re-aligning fencing and transferring decontamination unit.

Newman workers worked around exposed native soil and had to move an excavator from the new EZ into the area south of the 2nd transformer. Newman workers attempted to clean the tracks but this tracked contaminated material into the clean zone. Once the spread footing areas were excavated, Newman removed and covered this material with clean fill.

CVE electricians re-connected the power to the decontamination unit. Newman filled the water tank so the unit is functioning again.

3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

DAILY CHECKLIST

DATE: 02/15/11

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Comments:

Exclusion zone suspended to accommodate for re-aligning fencing and transferring decontamination unit. No work done in EZ today.

RMP tech operations crew removed batteries from old control building.

CVE fabricators poured pedestal for 2nd transformer and spread footings starting at 10:00.

Newman continued excavating around 46kV vaults and placed conduit for lines.

Bi-Weekly meeting discussions covered continued efforts and improvement in exclusion zone and environmental practices. Discussed altering EZ boundaries and transferring decontamination unit.

Discussions between CVE, R&R, and Eagle Environmental about demolition notification for old control building. Eagle was tasked with determining if the previous notification could still be applied or if a new one is required.

Snow and rain mix until around 9:45. Partly cloudy for the rest of the day. Highs around 40 F.

3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

DAILY CHECKLIST

DATE: 02/16/11

General

NA Work area Health and Safety Inspection

- NA Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
- NA Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
- NA Site hazard and safety instruction for all first time employees, contractors or visitors
- NA Complete Employee Meeting Record Form B (where applicable)
- NA Document required Respirator Training completion with Form H
- NA Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
- NA Confirm return of waste material manifest documents for each load with site manager.
- NA Complete all CSHASP Forms (for applicable activities planned for that day)
 - NA Illness/Injury Report Form A
 - NA Site-Specific Training Record Form C
 - NA Hot Work Permit Form D
 - NA Trench/Evacuation Permit Form E
 - NA Combined Space Entry Permit Form F
 - ☒ Exclusion zone operations are practiced as instructed.
 - ☒ Decontamination unit is working properly.
 - ☒ Workers are using decontamination unit as instructed.
 - ☒ Workers use personal protective equipment properly.
 - ☒ Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
 - ☒ Review sign-in/sign-out log throughout and at the end of the workday.
 - ☒ Secure the site at the end of the workday

Sampling

- NA Soil Confirmation sampling for any newly excavated areas
- ☒ Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
- NA Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
- NA Digitally photograph each sample location and at any place field sampling personnel determined necessary

- ☒ Electronically file photo files into the on-site database
- ☒ Complete Field Documentation
 - ☒ Field Sample Data Sheets (FSDS)
 - ☒ Logbook
 - ☒ On-site computer database
- ☒ Label each sample media with a unique number
- ☒ Seal sample(s) in zip lock plastic bags
- ☒ Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
- ☒ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
- ☒ Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
- ☒ Electronically file sample reports into on-site database



3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station

Date: 02/16/12

Location: 3rd West, 1st South, SLC

Job Number: _____

Survey Conducted By: Justin Kargis

Title: _____

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			x	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/ belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Comments:

Exclusion zone activated once excavations began.

Newman altered the EZ and began digging for vaults south of the 46 kV vaults. They also continued removing fill around the 46kV vaults in preparation for flow fill.

Newman cleaned some minimal track out in the parking lot that had come off their excavator.

CVE fabricators worked on rebar and preparing to pour piers on spread footings.

Weather was dry and sunny with highs near 40 F.

3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

DAILY CHECKLIST

DATE: 02/17/11

General

- NA Work area Health and Safety Inspection
- NA Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
- NA Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
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- ☒ Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
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- ☒ Review sign-in/sign-out log throughout and at the end of the workday.
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- ☒ Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
- ☒ Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
- ☒ Electronically file sample reports into on-site database



3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station

Date: 02/17/12

Location: 3rd West, 1st South, SLC

Job Number: _____

Survey Conducted By: Justin Kargis

Title: _____

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
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1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			x	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
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Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
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1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a 1/2 fire resistance barrier.			x	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.			x	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.	x			
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Comments:

Exclusion zone activated once excavations began.

Cache Valley Electric surveyors entered the contaminated zone before excavations began to shoot some lines for placement of equipment.

Newman placed vaults at the corner of the north arm of the yard. They filled in the area of the old switch gear basement with native soil in preparation for more stock piling.

CVE fabricators continued forming rebar for pillars set on spread footings.

Weather was mild and mostly sunny with temperatures around 40.

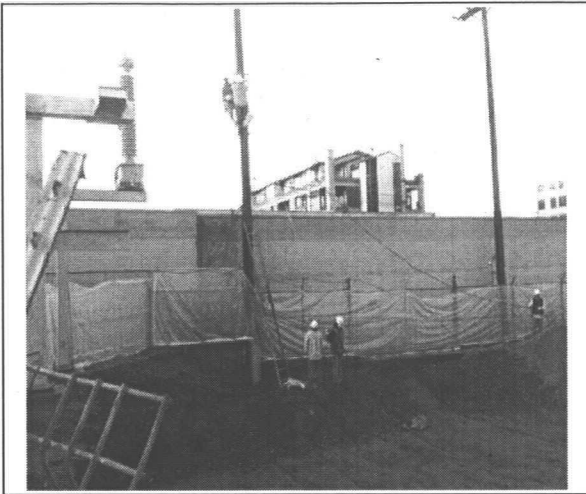


PHOTO 1



PHOTO 2



PHOTO 3



PHOTO 4

R & REnvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:
DCR

DRAWN BY:
JMK

DATE
02/13/12

FILE:

SITE PHOTOGRAPHS



**3rd West Substation
"2011 Upgrade Project"
Salt Lake City, Utah**

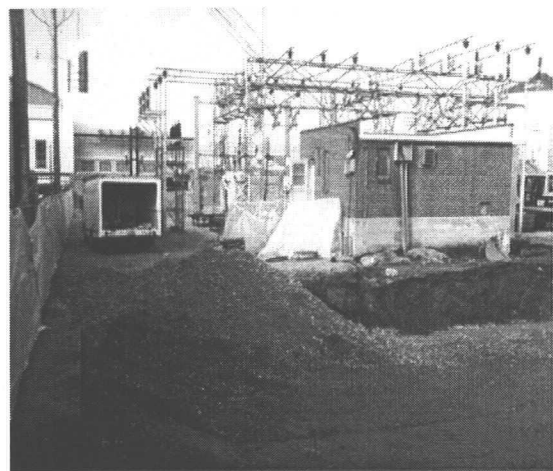


PHOTO 5

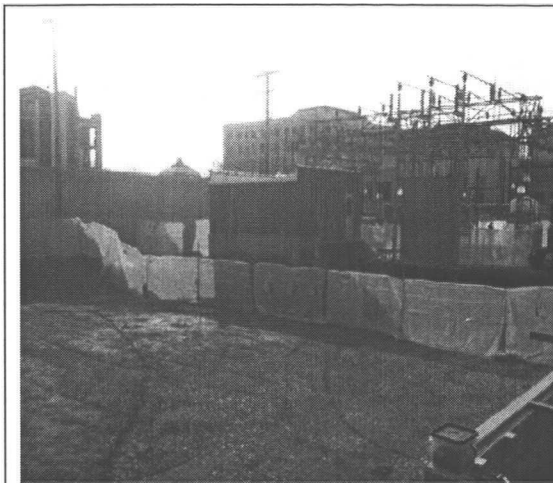


PHOTO 6

R & REnvironmental, Inc.

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(801) 352-2380 • Fax: (801) 352-2381

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JMK

DATE

02/13/12

FILE:

SITE PHOTOGRAPHS



**3rd West Substation
"2011 Upgrade Project"
Salt Lake City, Utah**



PHOTO 1

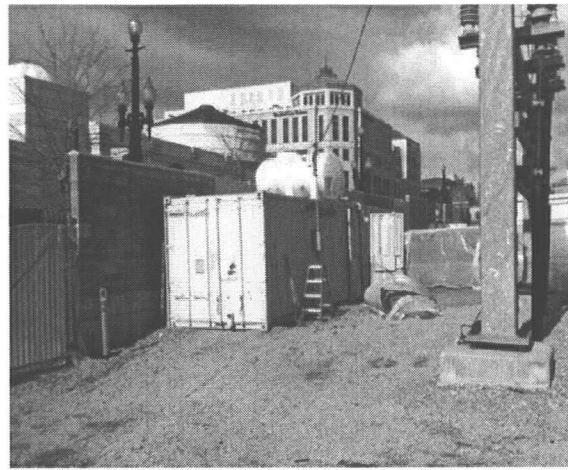


PHOTO 2



PHOTO 3



PHOTO 4

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JMK

DATE

02/14/12

FILE:

SITE PHOTOGRAPHS



**3rd West Substation
"2011 Upgrade Project"
Salt Lake City, Utah**



PHOTO 1

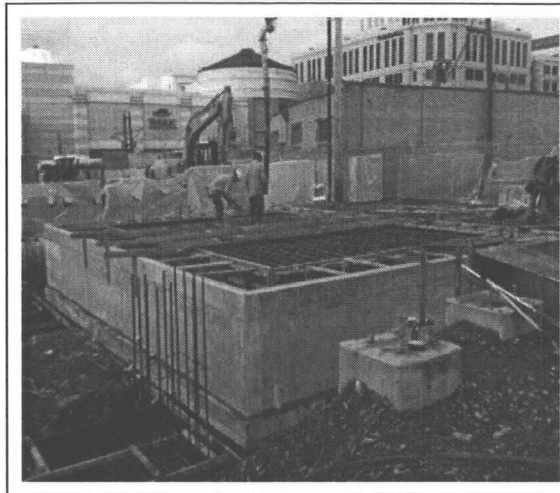


PHOTO 2



PHOTO 3

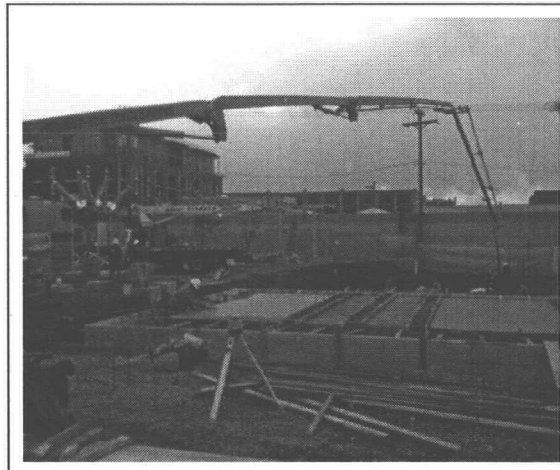


PHOTO 4

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SCALE:

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02/15/12

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SITE PHOTOGRAPHS



3rd West Substation
"2011 Upgrade Project"
Salt Lake City, Utah



PHOTO 1

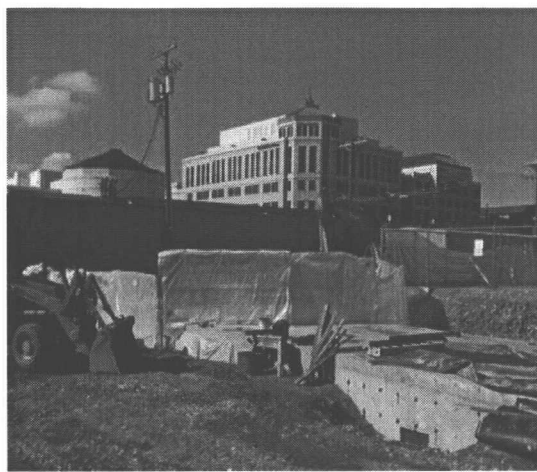


PHOTO 2



PHOTO 3

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02/16/12

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SITE PHOTOGRAPHS



**3rd West Substation
"2011 Upgrade Project"
Salt Lake City, Utah**

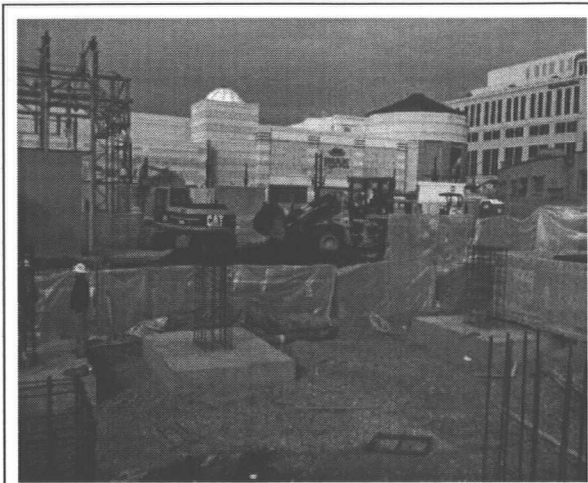


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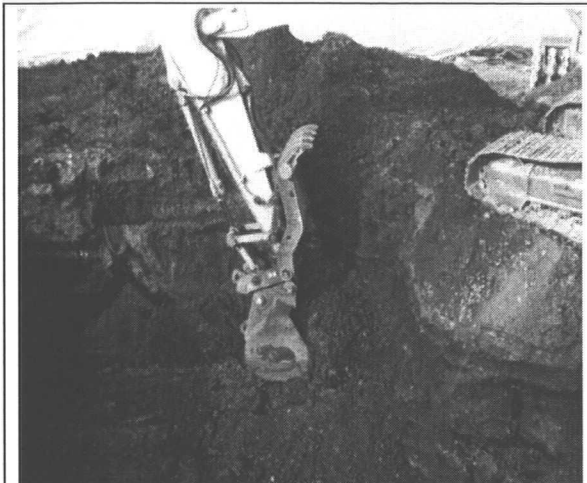


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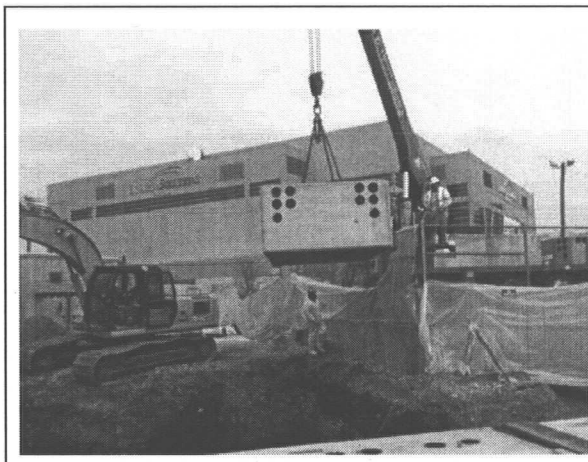


PHOTO 3



PHOTO 4

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PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:
DCR

DRAWN BY:
JMK

DATE
02/17/12

FILE:

SITE PHOTOGRAPHS



3rd West Substation
"2011 Upgrade Project"
Salt Lake City, Utah

PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Monday, February 13, 2012

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 7:00

Crew Stop Time: 17:10

Tot Hrs mns: 10:10

FCR Start Time: 6:50

FCR Stop Time: 17:15

Tot Hrs mns: 10:25

Use military time format 00:00

WEATHER CONDITIONS: Partly Cloudy, 35 degrees in AM - 45 degrees in PM

DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)

R&R set up four monitors. Newman moved the Decon conexes to the west side of the old 46 kV yard and moved the fence to define the new exclusion zone. CVE Line Crew removed the service to the conexes and rerouted it to the new location. CVE Fab Crew continued working on the west transformer pedestal, placing anchor bolts, completing rebar alignment and squaring up the form. John Mancini met with Scott Collard and it was determined that CVE will modify the lids on the vaults inside the northwest gate to allow for road installation. Eagle Environmental cleaned out the battery room in the old control building. RMP will be here on Wednesday AM to remove the batteries, rack and charger. Dave, with Century Link, authorized us to go ahead and remove the communication lines to the old control building. (515-241-3943) CVE Fab Crew = 6, Newman = 5, CVE Line Crew = 5, Eagle = 2, Wagstaff = 2, R&R = 1, Wilding = 1.

IF WORKING IN ENERGIZED SUBSTATION:

Dispatcher login, name and time: Gus Montanez 0650

Dispatcher logout, name and time: Gus Montanez 1710

DISCREPANCIES:

IMMEDIATE CORRECTIVE ACTION TAKEN:

11/30 - Identified an additional retaining wall that is below grade and does not show on the Demo Plan.	Will excavate to determine dimensions.
12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and didn't find them. Will try again. Actual depth will be much deeper than design of new bank	Sent e-mail to Roger F.

DELAYS OR LOST TIME ENCOUNTERED:

--

EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, crew truck, boom truck. Newman: portable wash-down structure, trachoe (3), loader, bobcat, mini-ex, power washer, water truck, compactor (2), backhoe.

OSHA Recordable Safety Incidents:

Reported by:

Time:

--	--	--



Russ Johnson
Field Construction Representative

PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Tuesday, February 14, 2011

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 7:00

Crew Stop Time: 15:25

Tot Hrs mns: 8:25

FCR Start Time: 6:45

FCR Stop Time:

Tot Hrs mns: 17:15

Use military time format 00:00

WEATHER CONDITIONS: Cloudy, 34 degrees in AM - Partly Cloudy, 43 degrees in PM

DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)

R&R set up four monitors. Newman excavated out the north end of the 46 kV vaults and excavated for the "E" foundations on the south side of the west transformer. Newman readied the Decon and filled the water tank. CVE Fab Crew laid out the spread footings in the excavation south of the west transformer, set forms and placed rebar for same. CVE Electrical Crew hooked up the power to the Decon. I dropped by the NTO to pick up paper work from Alan Wayment but missed him. CVE Fab Crew = 7, CVE Electrical Crew = 3, Newman = 4, R&R = 1, Wilding = 1.

IF WORKING IN ENERGIZED SUBSTATION:

Dispatcher login, name and time: Gus Montanez 0645

Dispatcher logout, name and time:

DISCREPANCIES:

IMMEDIATE CORRECTIVE ACTION TAKEN:

11/30 - Identified an additional retaining wall that is below grade and does not show on the Demo Plan.

Will excavate to determine dimensions.

12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and didn't find them. Will try again. Actual depth will be much deeper than design of new bank

Sent e-mail to Roger F.

DELAYS OR LOST TIME ENCOUNTERED:

EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, crew truck, boom truck. Newman: portable wash-down structure, trachoe (3), loader, bobcat, mini-ex, power washer, water truck, compactor (2), backhoe.

OSHA Recordable Safety Incidents:

Reported by:

Time:



Russ Johnson
Field Construction Representative

PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Wednesday, February 15, 2012

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 7:00

Crew Stop Time: 17:10

Tot Hrs mns: 10:10

FCR Start Time: 6:35

FCR Stop Time: 17:30

Tot Hrs mns: 10:55

Use military time format 00:00

WEATHER CONDITIONS:

Overcast, 35 degrees in AM - Partly Cloudy, 45 degrees in PM

DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)

R&R set up four monitors. Newman removed some ABC material from the east side of the 46 kV vaults, wrapped 46 kV cables where the outside insulation was damaged during the excavation process, and ran conduits from the existing ductbank into the north 46 kV vault. CVE Electrical crew worked with Newman on cable repairs and ran wiring in the control building. CVE Fab Crew poured 172 cyds of concrete for the west transformer (approx. 115 cyds) and the spread footing mats, "E" foundations (approx. 57 cyds). Wilding conducted air and slump tests, and cylinders, on four of the 17 trucks. RMP crews came on site and removed the batteries from the old control building. CVE Fab Crew = 7, CVE Electrical Crew = 3, Newman = 4, Brundage-Bone 1, R&R = 1, Wilding = 1.

IF WORKING IN ENERGIZED SUBSTATION:

Dispatcher login, name and time: Gus Montanez 0634

Dispatcher logout, name and time: Gus Montanez 1727

DISCREPANCIES:

IMMEDIATE CORRECTIVE ACTION TAKEN:

11/30 - Identified an additional retaining wall that is below grade and does not show on the Demo Plan.	Will excavate to determine dimensions.
12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and didn't find them. Will try again. Actual depth will be much deeper than design of new bank	Sent e-mail to Roger F.

DELAYS OR LOST TIME ENCOUNTERED:

--

EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex (2), tool trailer, crew truck, boom truck. Newman: portable wash-down structure, trachoe (3), loader, bobcat, mini-ex, power washer, water truck, compactor (2), backhoe.

OSHA Recordable Safety Incidents:

Reported by:

Time:

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Russ Johnson
Field Construction Representative

PACIFICORP OPERATIONS - Field Construction Representative Daily Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Thursday, February 16, 2011

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 7:00

Crew Stop Time: 17:10

Tot Hrs mns: 10:10

FCR Start Time: 6:38

FCR Stop Time: 17:30

Tot Hrs mns: 10:52

Use military time format 00:00

WEATHER CONDITIONS:

Partly Cloudy, 31 degrees in AM - 45 degrees in PM

DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)

R&R set up four monitors. Newman continued working on the 46 kV vaults, stubbing conduits in the north end, cleaning out dirt and removing backfill. CVE Electrical crew wired panels. Started excavating for 12 kV vaults #4 and #5. CVE Fab Crew stripped the form supports, leaving the wall forms for the transformer and covered with insulation blankets. They removed forms for the spied footer mats and started placing rebar on the stems for the spread footings. RMP Communication Tech worked in the new control building. Wagstaff Crane Service showed up today to take a look at the site for the purpose of unloading the transformers. Wagstaff took some pictures and is going to recommend that Hundai send a representative for the trucking company to evaluate the alternatives for getting trucks into the site. CVE Fab Crew = 7, CVE Electrical Crew = 3, Newman = 5, R&R = 1, Wilding = 1.

IF WORKING IN ENERGIZED SUBSTATION:

Dispatcher login, name and time: Gus Montanez 0634

Dispatcher logout, name and time: Barry Neilson 1730

DISCREPANCIES:

IMMEDIATE CORRECTIVE ACTION TAKEN:

11/30 - Identified an additional retaining wall that is below grade and does not show on the Demo Plan.	Will excavate to determine dimensions.
12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and didn't find them. Will try again. Actual depth will be much deeper than design of new bank	Sent e-mail to Roger F.

DELAYS OR LOST TIME ENCOUNTERED:

--

EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex, (2), tool trailer, crew truck (2), boom truck. Newman: trachoe (3), loader, bobcat, mini-ex (2), water truck, compactor, backhoe.

OSHA Recordable Safety Incidents:

Reported by:

Time:

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Russ Johnson
Field Construction Representative

PACIFICORP OPERATIONS - Field Construction Representative Dally Log

PROJECT NAME: Third West Sub - Rebuild

DATE : Friday, February 17, 2012

PO & Work Order NO. : 3000078050 / 10035803

MAIN CONTRACTOR : Cache Valley Electric

Crew Start Time: 7:00

Crew Stop Time: 17:10

Tot Hrs mns: 10:10

FCR Start Time: 6:45

FCR Stop Time: 17:30

Tot Hrs mns: 10:45

Use military time format 00:00

WEATHER CONDITIONS: Partly Cloudy, 28 degrees in AM - 45 degrees in the PM

DESCRIPTION: (work performed, general comments, instructions to contractor, # of crew members onsite.)

R&R set up four monitors. Nevman continued excavating for the #4 and #5 12 kV vaults and set both. Newman backfilled along the east and north sides of the west transfonner. CVE Electrical crew wired panels. CVE Line Crew mobilized to the site, rounded up equipment and tools, and reviewed drawings. CVE Fab Crew completed tying rebar for the spread footing stems and made up fonnns for same. CVE Fab Crew = 6, CVE Electrical Crew = 3, CVE Line Crew = 2, Nevman = 5, R&R = 1, Wilding = 1.

IF WORKING IN ENERGIZED SUBSTATION:

Dispatcher login, name and time: Ken Barto 0645

Dispatcher logout, name and time: Jim Bowman 1730

DISCREPANCIES:

IMMEDIATE CORRECTIVE ACTION TAKEN:

11/30 - Identified an additional retaining wall that is below grade and does not show on the Demo Plan.	Will excavate to determine dimensions.
12/15 - Excavated to locate the 46 kV cables exiting the west side of the yard. Dug 8' and didn't find them. Will try aaain. Actual depth will be much deeper than desian of new bank	Sent e-mail to Roger F.

DELAYS OR LOST TIME ENCOUNTERED:

--

EQUIPMENT (working, delivered, idle):

CVE fab crew: Portable toilet (2), forklift, 1 dumpster, office trailer, conex, exclusion zone conex, (2), tool trailer, crew truck (2), boom truck. Newman: trachoe (3), loader, bobcat, mini-ex (2), water truck, compactor, backhoe.

OSHA Recordable Safety Incidents:

Reported by:

Time:

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Russ Johnson
Field Construction Representative



Reservoirs Environmental, Inc.

February 15, 2012

Laboratory Code: RES
Subcontract Number: NA
Laboratory Report: RES 229700-1
Project # / P.O. #: None Given
Project Description: None Given

David Roskelley
R & R Environmental
47 West 9000 South #2
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 229700-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr
President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0016

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 229700-1
 Client: R & R Environmental
 Client Project Number / P.O.: None Given
 Client Project Description: None Given
 Date Samples Received: February 14, 2012
 Analysis Type: TEM, AHERA
 Turnaround: 24 Hour
 Date Samples Analyzed: February 15, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm ²)	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm ²)
3W-021312 S	EM 863931	0.0800	986	ND	0.0049	BAS	BAS
3W-021312 W	EM 863932	0.0800	974	ND	0.0049	BAS	BAS
3W-021312 N	EM 863933	0.0800	970	ND	0.0050	BAS	BAS
3W-021312 E	EM 863934	0.0800	970	NO	0.0050	BAS	BAS

NA = Not Analyzed
 ND = None Detected
 BAS = Below Analytical Sensitivity
 Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester
 Filter Diameter = 25 mm
 Effective Filter Area = 385 sq mm

[Signature]

DATA QA

Due Date: 2.15.12
Due Time: 10am

RES 229700

REILAB **Reservoirs Environmental, Inc.**
3861 Logan St. Denver, CO 80216 • Ph: 303 864-1986 • Fax 303-477-4275 • Toll Free: 866 RES-ENV
Pager: 303-509-2098

INVOICE TO: (IF DIFFERENT)

CONTACT INFORMATION:

Company: <u>REL Environmental</u>	Company: <u>Dave Roskelley</u>	Contact: <u>Dave Roskelley</u>
Address: <u>47 W 9000 S. #2</u>	Address:	Phone:
<u>Suite 111 84070</u>		Fax:
		Cell/pager: <u>801 541-1035</u>
Project Number and/or P.O. #:		Final Del. Deliverable Email Address: <u>dave@relinv.com</u>
Project Description/Location:		

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS										VALID MATRIX CODES		LAB NOTES:						
PLM / PCM (TEM) <u> </u> RUSH (Same Day) <u> </u> PRIORITY (Next Day) <u> </u> STANDARD <u> </u>	(Rush PCM = 2hr, TEM = 8hr.)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-rec, ISO-indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s)	RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	Salmonella: +/-	E.coli O157:H7: +/-	Listeria: +/-	Aerobic Plate Count: +/- or Quantification	E.coli +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/-, Identification, Quantification	Air = A	Soil = B	
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm																		Dust = D	Paint = P	
Metal(s) / Dust <u> </u> RUSH <u> </u> 24 hr. <u> </u> 3-5 Day <u> </u>																		Soil = S	Wipe = W	
RCRA 8 / Metals & Welding <u> </u> RUSH <u> </u> 5 day <u> </u> 10 day <u> </u>																		Swab = SW	F = Food	
Fume Scan / TCLP <u> </u> RUSH <u> </u> 5 day <u> </u> 10 day <u> </u>																		Drinking Water = DW	Waste Water = WW	
Organics <u> </u> 24 hr. <u> </u> 3 day <u> </u> 5 Day <u> </u>		O = Other																		
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm		**ASTM E1792 approved wipe media only**																		
E.coli O157:H7, Coliforms, S.aureus <u> </u> 24 hr. <u> </u> 2 Day <u> </u> 3-5 Day <u> </u>		Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm ap	EM Number (Laboratory Use Only)													
Salmonella, Listeria, E.coli, APC, Y & M <u> </u> 48 Hr. <u> </u> 3-6 Day <u> </u>																				
Mold <u> </u> RUSH <u> </u> 24 Hr. <u> </u> 48 Hr. <u> </u> 5 Day <u> </u> 5 Day <u> </u>																				
Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.																				
Special Instructions:																				
Client sample ID number (Sample ID's must be unique)		SAMPLER'S INITIALS OR OTHER NOTES																		
1	3W-021312S																			
2	3W-021312W																			
3	3W-021312N																			
4	3W-021312E																			
5																				
6																				
7																				
8																				
9																				
10																				

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: <u>[Signature]</u>	Date/Time: <u>2/13/12</u>	Sample Condition: On Ice <u> </u> Sealed <u> </u> Infect <u> </u>
Laboratory Use Only	Temp. (F°) <u> </u> Yes / No <u> </u> Yes / No <u> </u> Yes / No <u> </u>	
Received By: <u>[Signature]</u>	Date/Time: <u>2.14.12</u> Carrier: <u>FedEx</u>	
Results:	Contact Phone Email Fax Date Time Initials	Contact Phone Email Fax Date Time Initials
	Contact Phone Email Fax Date Time Initials	Contact Phone Email Fax Date Time Initials

7980 5274 6095

Attachment I

Key to Count Sheets
Count Sheets
Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

A = Amosite
An = Anthophyllite
C = Chrysotile
Cr = Crocidolite
T = Tremolite

Structure Types

F = Fiber
B = Bundle
C = Cluster
M = Matrix

ND = no structures detected
M = other structure associated with a matrix
NAM = Non Asbestos Mineral
XGB = partly obscured by a grid bar

Sizing Conversion

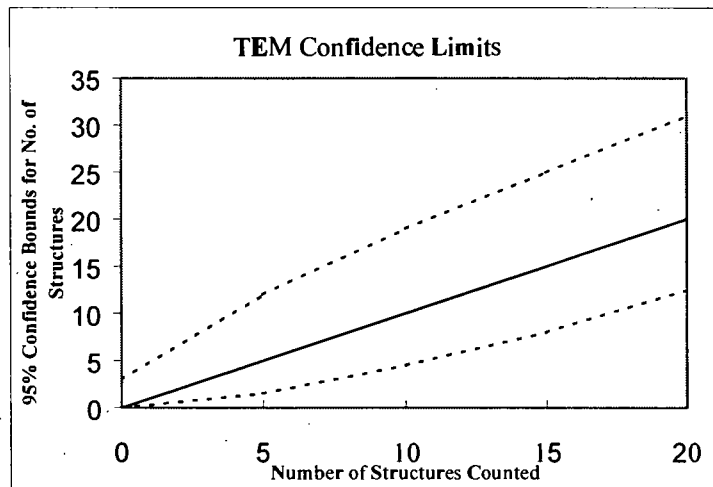
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr
Nathan DelHiero
Angela Heitger
Jonathan Bernard

Paul D. LoScalzo
Mark Steiner
Norberto Zimbleman
Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 μ m
Scale: 1D =	0.056 μ m
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	Roll
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	9.80
Date received by lab	2/14/12
Lab Job Number	224700
Lab Sample Number:	863931

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JM
Analysis data	2/15/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H4-6	ND												
	G4-6	ND												
	F4-6	ND												
	E4-6	ND												
B	H5-4	ND												
	G5-4	ND												
	G5-3	ND												
	F5-3	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

T:\Worksheet\In TEM Bench sheet.doc

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX <u>N</u> S
Voltage (KV)	100 KV
Magnification	<u>20KX</u> 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 μ m
Scale: 1D =	0.056 μ m
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	Rock
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	9.74
Date received by lab	2/14/12
Lab Job Number:	224760
Lab Sample Number:	203982

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	2/9/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Mbrith Analyzed
Scope Alignment	Data Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H3-1	ND												
	G3-1	ND					Prep A	80% on filter			5-7% debris			
	F3-1	ND					Prep B	90% on filter			5-7% debris			
	E3-1	ND												
B	F4-4	ND												
	E4-4	ND												
	C4-4	ND												
	B4-4	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

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Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX(N)S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client:	ReR
Sample Type (A=Air, O=Dust):	A
Air volume (L) or dust area (cm2)	9.70
Date received by lab	2/14/12
Lab Job Number:	224500
Lab Sample Number	203989

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	M
Analysis date	2/19/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	E4-4	ND												
	C4-4	ND					Pump A	70% a.m.f			10-15% debris			
	K2-3	ND					Rip B	80% a.m.f			10-15% debris			
	H2-3	ND												
B	K4-6	ND												
	H4-6	ND												
	G4-6	ND												
	F4-6	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

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Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N/S)
Voltage (KV)	100 KV
Magnification	20KX - 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	Rel
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	1.70
Date received by lab	2/15/12
Lab Job Number:	229500
Lab Sample Number:	20395

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JM
Analysis date	2/15/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Morith Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	G6-3	ND												
	F6-3	ND					Pmp A 80% in bucket			5% debris				
	E6-3	ND					Pmp B 80% in bucket			5% debris				
	E5-3	ND												
B	K4-3	ND												
	H4-3	ND												
	G4-3	ND												
	F4-3	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

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Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber:	is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.
Bundle:	is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.
Cluster:	is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.
Matrix:	is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

$$\text{Area Analyzed, mm}^2 = \# \text{ GO counted} \times \text{Average GO Area (mm)}$$

$$\text{Concentration, s/cc} = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2\text{)}}{\text{Average GO area (mm}^2\text{)}} \times \frac{1\text{L}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2\text{)}}$$

GO = TEM grid opening



Reservoirs Environmental, Inc.

February 16, 2012

Laboratory Code: RES
Subcontract Number: NA
Laboratory Report: RES 229783-1
Project # / P.O. #: None Given
Project Description: 3rd West Sub - RMP

Eldon Romney
R & R Environmental
47 West 9000 South #2
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 229783-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr
President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101898-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 229783-1
 Client: R & R Environmental
 Client Project Number / P.O.: None Given
 Client Project Description: 3rd West Sub - RMP
 Date Samples Received: February 15, 2012
 Analysis Type: TEM, AHERA
 Turnaround: 24 Hour
 Date Samples Analyzed: February 16, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm ²)	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm ²)
3W-021412 SW	EM 864371	0.1000	815	ND	0.0047	BAS	BAS
3W-021412 NW	EM 864372	0.1000	819	ND	0.0047	BAS	BAS
3W-021412 NE	EM 864373	0.1000	815	ND	0.0047	BAS	BAS
3W-021412 SE	EM 864374	0.1000	813	ND	0.0047	BAS	BAS

NA = Not Analyzed
 ND = None Detected
 BAS = Below Analytical Sensitivity
 Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester
 Filter Diameter = 25 mm
 Effective Filter Area = 385 sq mm

Digitally signed
 by [Signature]
 DN: cn = [Signature]
 email = [Signature]
 o = [Signature]
 ou = [Signature]
 c = [Signature]
 Date: 2012.02.16
 11:18:52 -0500

DATA QA

Due Date: 2/16/12
Due Time: 8:30 a

RES 229783

REI LAB **Reservoirs Environmental, Inc.**
5801 Logan St. Denver, CO 80216 • Ph: 303 964-1986 • Fax 303-477-4273 • Toll Free: 866 RES-ENV
Pager: 303-508-2096

Page 1 of 1

INVOICE TO: (IF DIFFERENT)

CONTACT INFORMATION:

Company: <u>REI Environmental</u>	Company:	Contact: <u>Dave Roskelley</u>	Contact:
Address: <u>47 W 9000 S #2</u>	Address:	Phone:	Phone:
<u>Sandy UT 84043</u>		Fax:	Fax:
		Cell/pager: <u>801 541-1035</u>	Cell/pager:
Project Number and/or P.O. #:		Final Date Deliverable Email Address:	
Project Description/Location: <u>3rd West Sub - RMP</u>		<u>dave@reimv.com</u>	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS										VALID MATRIX CODES		LAB NOTES:			
PLM / PCM / TEM	<u>RUSH (Same Day)</u> <u>X</u> PRIORITY (Next Day) <u>STANDARD</u> (Rush PCM = 2hr, TEM = 8hr.)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s)	PCRA & TCPL, Welding Fume, Metals Scan	ORGANICS - METH.	Salmonella: +/- E.coli O157:H7: +/- Listeria: +/- Aerobic Plate Count: +/- or Quantification E.coli: +/- or Quantification Coliforms: +/- or Quantification Staphylococcus: +/- or Quantification Y & M: +/- or Quantification Mold: +/-, Identification, Quantification	MICROBIOLOGY	SAMPLES INITIALS OR OTHER NOTES	Air = A	Bulk = B				
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm												Dust = D	Paint = P				
Metal(s) / Duat <u>RUSH</u> 24 hr. 3-5 Day												Soli = S	Wipe = W				
RCRA B / Metals & Welding Fume Scan / TCPL <u>RUSH</u> 5 day 10 day												Swab = SW	F = Food				
Organics <u>24 hr.</u> 3 day 5 Day												Drinking Water = DW	Waste Water = WW				
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 5pm												O = Other					
E.coli O157:H7, Coliforms, S.aureus <u>24 hr.</u> 2 Day 3-5 Day												**ASTM E1792 approved wipe media only**					
Salmonella, Listeria, E.coli, APC, Y & M <u>48 Hr.</u> 3-5 Day												Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)
Mold <u>RUSH</u> 24 Hr 48 Hr 3 Day 5 Day																	
Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.																	
Special Instructions:																	
Client sample ID number (Sample ID's must be unique)																	
1	<u>3W-021412 SW</u>												<u>815</u>	<u>A</u>	<u>2/16/12</u>		<u>864371</u>
2	<u>3W-021412 NW</u>												<u>819</u>	<u>1</u>			<u>72</u>
3	<u>3W-021412 NE</u>												<u>815</u>				<u>73</u>
4	<u>3W-021412 SE</u>												<u>813</u>				<u>74</u>
5																	
6																	
7																	
8																	
9																	
10																	

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody constitutes an analytical services agreement with payment terms of NET 30 days. Failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: <u>Justin Frazier</u>	FedEx	Date/Time: <u>2/14/12</u>	Sample Condition:	On Ice	Sealed	Intact
Laboratory Use Only			Temp. (F°)	Yes / No	Yes / No	Yes / No
Received By: <u>BS</u>	Date/Time: <u>2/15/12 8:30 a</u>	Carrier: <u>FedEx</u>				
Results:	Contact	Phone Email Fax	Date	Time	Initials	Contact
	Contact	Phone Email Fax	Date	Time	Initials	Contact

7932 222T 252T

Attachment I

Key to Count Sheets
Count Sheets
Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

A = Amosite
An = Anthophyllite
C = Chrysotile
Cr = Crocidolite
T = Tremolite

Structure Types

F = Fiber
B = Bundle
C = Cluster
M = Matrix

ND = no structures detected
M = other structure associated with a matrix
NAM = Non Asbestos Mineral
XGB = partly obscured by a grid bar

Sizing Conversion

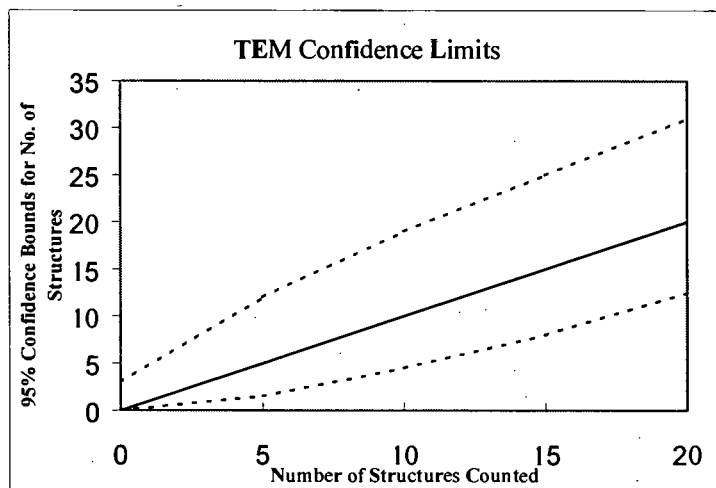
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr
Nathan DelHierro
Angela Heitger
Jonathan Bernard

Paul D. LoScalzo
Mark Steiner
Norberto Zimbleman
Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	REI
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	875
Date received by lab	2/15/12
Lab Job Number:	227783
Lab Sample Number	864371

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JTB
Analysis date	2/16/12
Method (D=Direct, I=Indirect, IA=Indirect, asfied)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K4-1	ND												
	H4-1	ND					Prep A	80% in front	3-5% debris					
	G4-1	ND					Prep B	70% in front	3-5% debris					
	E3-6	ND												
	C3-6	ND												
B	F3-3	ND												
	E3-3	ND												
	C3-3	ND												
	B3-3	ND												
	E3-4	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

T:\Worksheet in TEM Bench sheet.doc

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 μ m
Scale: 1D =	0.058 μ m
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	R&R
Sample Type (A=Air; D=Dust):	A
Air volume (L) or dust area (cm ²)	8.19
Date received by lab	2/15/12
Lab Job Number:	23-1783
Lab Sample Number	569372

Analyzed by	JTB
Analysis date	2/16/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AA
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H3-6	ND												
	G3-6	ND					Prep A	80% unburnt			3-5% debris			
	F3-6	ND					Prep B	100% unburnt			% debris			
	E3-6	ND												
	C3-6	ND												
B	H3-3	ND												
	G3-3	ND												
	F3-3	ND												
	H3-1	ND												
	G3-1	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

T:\Worksheet in TEM Bench sheet.doc

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX / 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	REI
Sample Type (A=Air; D=Dust):	A
Air volume (L) or dust area (cm ²)	8.5
Date received by lab	2/15/12
Lab Job Number:	225783
Lab Sample Number:	802375

Analyzed by	JTB
Analysis date	2/16/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I
Counting rules (ISO, AHERA, ASTM)	AA
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K3-4	ND												
	H3-4	ND					Pimp A	80% in front			3-5% debris			
	G3-4	ND					Pimp B	70% in front			3-5% debris			
	F3-4	ND												
	F2-1	ND												
B	G3-4	ND												
	F3-4	ND												
	F3-1	ND												
	H2-3	ND												
	G2-3	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

T:\Worksheet in TEM Bench sheet.doc

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	2010X 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	R&R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	813
Date received by lab	2/15/12
Lab Job Number:	27-1783
Lab Sample Number:	524374

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JTB
Analysis date	2/16/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K4-4	ND												
	K4-1	ND					Prep A 60% in hmt			3-5% debris				
	H4-4	ND					Prep B 90% in hmt			3-5% debris				
	H4-1	ND												
	G4-1	ND												
B	K4-3	ND												
	H4-3	ND												
	G4-3	ND												
	F4-3	ND												
	E4-3	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

T:\Worksheet in TEM Bench sheet.doc

Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber:	is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.
Bundle:	is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.
Cluster:	is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.
Matrix:	is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

$$\text{Area Analyzed, mm}^2 = \# \text{ GO counted} \times \text{Average GO Area (mm)}$$

$$\text{Concentration, s/cc} = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2\text{)}}{\text{Average GO area (mm}^2\text{)}} \times \frac{1\text{L}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2\text{)}}$$

GO = TEM grid opening



Reservoirs Environmental, Inc.

February 17, 2012

Laboratory Code: RES
Subcontract Number: NA
Laboratory Report: RES 229871-1
Project # / P.O. #: None Given
Project Description: 3rd West Sub - RMP

Eldon Romney
R & R Environmental
47 West 9000 South #2
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 229871-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr
President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 229871-1
 Client: R & R Environmental
 Client Project Number / P.O.: None Given
 Client Project Description: 3rd West Sub - RMP
 Date Samples Received: February 16, 2012
 Analysis Type: TEM, AHERA
 Turnaround: 24 Hour
 Date Samples Analyzed: February 17, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm ²)	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm ²)
3W-021512 SW	EM 864972	0.0900	916	ND	0.0047	BAS	BAS
3W-021512 NW	EM 864973	0.0900	909	ND	0.0047	BAS	BAS
3W-021512 NE	EM 864974	0.0900	909	ND	0.0047	BAS	BAS
3W-021512 SE	EM 864975	0.0900	907	ND	0.0047	BAS	BAS

NA = Not Analyzed
 ND = None Detected
 BAS = Below Analytical Sensitivity
 Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester
 Filter Diameter = 25 mm
 Effective Filter Area = 385 sq mm

gvr
 Date: 2/17/12
 By: gvr

DATA QA

Due Date: 2-17-12Due Time: 830a
REI LAB Reservoirs Environmental, Inc.
 6801 Logan St. Denver, CO 80218 • Pk 303 664-1888 • Fax 303-477-4275 • Toll Free: 888-RES-ENV
 Pages: 303-508-2088
Page 1 of 1

INVOICE TO: (IF DIFFERENT)

CONTACT INFORMATION:

Company: <u>REI Environmental</u>	Company:	Contact: <u>Dave Roskelley</u>	Contact:
Address: <u>47 W. 9000S, #2</u>	Address:	Phone:	Phone:
<u>Sandy, UT 84070</u>		Fax:	Fax:
		Cell/pager: <u>801 541-1035</u>	Cell/pager:
Project Number and/or P.O. #:		Print Data Deliverable Email Address:	
Project Description/Location: <u>30 West Sub-RAD</u>		<u>dave@reio.com</u>	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS										VALID MATRIX CODES		LAB NOTES:							
PLM / PCM / TEM	<u>RUSH</u> (Same Day) <u>X</u> <u>PRIORITY</u> (Next Day) <u>STANDARD</u> (Rush PCM = 2hr, TEM = 6hr.)	PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s)	RCRA & TCLP, Welding Fume, Metals Scan	ORGANICS - METH	Salmonella: +/-	E.coli O157:H7: +/-	Listeria: +/-	Aerobic Plate Count: +/- or Quantification	E.coli +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/- or Quantification	SAMPLE'S INITIALS OR OTHER NOTES	Air = A	Bulk = B	
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm																			Dust = D	Paint = P	
Metal(s) / Dust <u>RUSH</u> 24 hr. 3-5 Day																			Soil = S	Wipe = W	
RCRA 8 / Metals & Welding Fume Scan / TCLP <u>RUSH</u> 5 day 10 day																			Swab = SW	F = Food	
Organics <u>24 hr. 3 day 5 Day</u>												Drinking Water = DW	Waste Water = WW								
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm												O = Other									
E.coli O157:H7, Coliforms, S.aureus <u>24 hr. 2 Day 3-5 Day</u>												**ASTM E1792 approved wipe media only**									
Salmonella, Listeria, E.coli, APC, Y & M <u>48 Hr. 3-5 Day</u>												Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hr/mm a/p	EM Number (Laboratory Use Only)				
Mold <u>RUSH 24 Hr 48 Hr 3 Day 5 Day</u>																					
Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.																					
Special Instructions:																					
Client sample ID number (Sample ID's must be unique)																					
1	<u>3W-021512 SW</u>																				
2	<u>3W-021512 NW</u>																				
3	<u>3W-021512 NE</u>																				
4	<u>3W-021512 SE</u>																				
5																					
6																					
7																					
8																					
9																					
10																					

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing this company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest charge.

Relinquished By: <u>[Signature]</u> FedEx	Date/Time: <u>2/15/12</u>	Sample Condition:	On Ice	Sealed	Intact
Laboratory Use Only		Temp. (F°)	Yes / No	Yes / No	Yes / No
Received By: <u>[Signature]</u>	Date/Time: <u>2/16/12</u> 830a	Carrier: <u>FedEx</u>			
Results:	Contact	Phone	Email	Fax	Initials
	Contact	Phone	Email	Fax	Initials

Phone #1: 75323801367
 7-2011_version 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

A = Amosite
An = Anthophyllite
C = Chrysotile
Cr = Crocidolite
T = Tremolite

Structure Types

F = Fiber
B = Bundle
C = Cluster
M = Matrix

ND = no structures detected
M = other structure associated with a matrix
NAM = Non Asbestos Mineral
XGB = partly obscured by a grid bar

Sizing Conversion

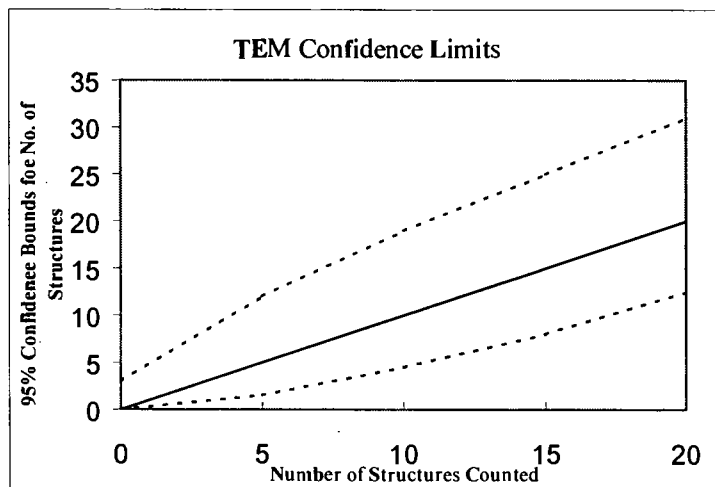
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr
Nathan DelHiero
Angela Heitger
Jonathan Bernard

Paul D. LoScalzo
Mark Steiner
Norberto Zimbleman
Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	REI
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	916
Date received by lab	2/16/12
Lab Job Number:	227871
Lab Sample Number:	864772

Analyzed by	JB
Analysis date	2/17/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	G3-6	ND												
	F3-6	ND												
	G3-3	ND												
	L4-1	ND												
	H5-6	MD												
B	G5-6	ND												
	F5-6	ND												
	E5-6	ND												
	C5-6	MD												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

T:\Worksheet in TEM Bench sheet.doc

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 μ m
Scale: 1D =	0.056 μ m
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	REI
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	916
Date received by lab	2/16/12
Lab Job Number:	229871
Lab Sample Number:	804972

Analyzed by	JB
Analysis date	2/17/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	G3-6	ND												
	F3-6	ND												
	G3-3	ND					Pump A ~ 50% in tank				5% debris			
	L4-1	ND					Pump B 75% in tank				5% debris			
	H5-6	MD												
B	G5-6	ND												
	F5-6	ND												
	E5-6	ND												
	C5-6	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

T:\Worksheet in TEM Bench sheet.doc

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL-100 CX (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 μ m
Scale: 1D =	0.056 μ m
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	REI
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	109
Date received by lab	2/17/12
Lab Job Number:	229891
Lab Sample Number	801973

Analyzed by	JB
Analysis date	2/17/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AP
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K4-4	ND												
	H4-4	ND												
	K4-6	ND												
	K4-3	ND												
	H4-6	ND												
B	K4-4	ND												
	H4-4	ND												
	G4-4	ND												
	G4-6	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX - 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	REI
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	709
Date received by lab	2/16/12
Lab Job Number:	229871
Lab Sample Number:	861971

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JB
Analysis date	2/17/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AA
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K4-1	ND					Pump A	90% chrysotile	5% debris					
	H4-1	ND												
	G4-1	ND					Pump B	70% chrysotile	5% debris					
	F4-1	ND												
	E5-4	ND					Pump B	2/17/12						
B	H6-4	ND												
	G6-4	ND												
	F6-4	ND												
	E6-4	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 μ m
Scale: 1D =	0.056 μ m
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	RyK
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	90.3
Date received by lab	2/16/12
Lab Job Number:	279871
Lab Sample Number:	80-175

Analyzed by	JB
Analysis date	2/17/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H4-4	ND												
	G4-4	ND												
	F4-4	ND												
	E4-4	ND												
	C4-4	ND												
B	H4-3	ND												
	G4-3	ND												
	F4-3	ND												
	E4-3	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber:	is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.
Bundle:	is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.
Cluster:	is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.
Matrix:	is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

$$\text{Area Analyzed, mm}^2 = \# \text{ GO counted} \times \text{Average GO Area (mm)}$$

$$\text{Concentration, s/cc} = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2\text{)}}{\text{Average GO area (mm}^2\text{)}} \times \frac{\text{IL}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2\text{)}}$$

GO = TEM grid opening



February 20, 2012

Laboratory Code: RES
Subcontract Number: NA
Laboratory Report: RES 229965-1
Project # / P.O. #: None Given
Project Description: 3rd West Sub - RMP

David Roskelley
R & R Environmental
47 West 9000 South #2
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 229965-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeanne Spencer Orr", is written over a horizontal line.

Jeanne Spencer Orr
President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-4; TDH: #30-0015

TABLE 1. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 229965-1
 Client: R & R Environmental
 Client Project Number / P.O.: None Given
 Client Project Description: 3rd West Sub - RMP
 Date Samples Received: February 17, 2012
 Analysis Type: TEM, AHERA
 Turnaround: 24 Hour
 Date Samples Analyzed: February 17, 2012

Client ID Number	Lab ID Number	Area Analyzed (mm ²)	Air Volume Sampled (L)	Number of Asbestos Structures Detected	Analytical Sensitivity (s/cc)	Asbestos Concentration (s/cc)	Filter Loading (s/mm ²)
3W-021612 SW	EM 865601	0.0900	943	ND	0.0045	BAS	BAS
3W-021612 NW	EM 865602	0.0900	945	ND	0.0045	BAS	BAS
3W-021612 NE	EM 865603	0.0900	943	ND	0.0045	BAS	BAS
3W-021612 SE	EM 865604	0.0900	934	ND	0.0046	BAS	BAS

NA = Not Analyzed
 ND = None Detected
 BAS = Below Analytical Sensitivity
 Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester
 Filter Diameter = 25 mm
 Effective Filter Area = 385 sq mm

EE
 Digitally signed by
 Elaine E. Harman
 DN: CN = Elaine
 Harman, C = US,
 O = Reservoirs
 Environmental,
 INC.
 Date: 2012.02.20
 11:46:58 -0700

DATA QA

Due Date: 2/8/12
Due Time: 8:50a

RES 229965



Reservoirs Environmental, Inc.

5801 Logan St, Denver, CO 80216 • Ph: 303 984-1888 • Fax 303-477-4275 • Toll Free: 888 RES-ENV
Pager: 303-609-2098

Page 1 of 1

INVOICE TO: (IF DIFFERENT)

CONTACT INFORMATION:

Company: <u>R&R Environmental</u>	Company:	Contact: <u>Dave Ruckley</u>	Contact:
Address: <u>472 W. 9000 S #2</u>	Address:	Phone:	Phone:
<u>Sandy UT. 84070</u>		Fax:	Fax:
		Cell/pager: <u>801 541-1035</u>	Cell/pager:
Project Number and/or P.O. #:		Final Data Deliverable Email Address:	
Project Description/Location: <u>3rd West Sub-RMP</u>		<u>dave@renviro.com</u>	

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS												VALID MATRIX CODES		LAB NOTES:								
PLM / PCM / TEM <u>TEM</u> <u>RUSH</u> (Same Day) <u>PRIORITY</u> (Next Day) <u>STANDARD</u> (Rush PCM = 2hr, TEM = 6hr.)		PLM - Short report, Long report, Point Count	TEM - AHERA, Level II, 7402, ISO, +/-, Quant, Semi-quant, Micro-vac, ISO-Indirect Preps	PCM - 7400A, 7400B, OSHA	DUST - Total, Respirable	METALS - Analyte(s)	RCRA 8, TCLP, Welding Fume, Metals Scan	ORGANICS - METH	Salmonella: +/-	E.coli O157:H7: +/-	Listeria: +/-	Aerobic Plate Count: +/- or Quantification	E.coli: +/- or Quantification	Coliforms: +/- or Quantification	S.aureus: +/- or Quantification	Y & M: +/- or Quantification	Mold: +/-, Identification, Quantification	SAMPLER'S INITIALS OR OTHER NOTES	Air = A Bulk = B Dust = D Paint = P Soil = S Wipe = W Swab = SW F = Food Drinking Water = DW Waste Water = WW O = Other **ASTM E1702 approved wipe media only**					
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm																			Sample Volume (L) / Area	Matrix Code	# Containers	Date Collected mm/dd/yy	Time Collected hh/mm ap	EM Number (Laboratory Use Only)
Metal(s) / Dust <u>RUSH</u> 24 hr. 3-5 Day																								
RCRA 8 / Metals & Welding Fume Scan / TCLP <u>RUSH</u> 5 day 10 day **Prior notification is required for RUSH turnarounds.**																								
Organics 24 hr. 3 day 5 Day																								
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pm																								
E.coli O157:H7, Coliforms, S.aureus 24 hr. 2 Day 3-5 Day																								
Salmonella, Listeria, E.coli, APC, Y & M 48 Hr. 3-5 Day																								
Mold <u>RUSH</u> 24 Hr 48 Hr 3 Day 5 Day																								
Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.																								
Special Instructions:																								
Client sample ID number (Sample ID's must be unique)																								
1	3W-021612 SW	X						943	A	2/16/12			265601											
2	3W-021612 NW							945					22											
3	3W-021612 NE							943					23											
4	3W-021612 SE							934					24											
5																								
6																								
7																								
8																								
9																								
10																								

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the inaccuracy of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: <u>[Signature]</u>	FedEx	Date/Time: <u>2/16/12</u>	Sample Condition: On Ice Sealed Intact
Laboratory Use Only			Tomp. (F°) Yes / No Yes / No <u>Yes / No</u>
Received By: <u>[Signature]</u>	Date/Time: <u>2/17/12 8:50a</u>	Carrier: <u>FedEx</u>	
Results:	Contact: <u>Dave</u> Phone Email Fax	Date/Time: <u>2/18/12</u> Time: <u>9:30a</u> Initials: <u>[Initials]</u>	Contact: Phone Email Fax
	Contact: Phone Email Fax	Date Time Initials	Contact: Phone Email Fax

[Signature] * 7532 4043 5430
7-2011_version 1



Reservoirs Environmental, Inc.

February 21, 2012

Laboratory Code: RES
Subcontract Number: NA
Laboratory Report: RES 230091-1
Project # / P.O. #: None Given
Project Description: 3rd West Sub - RMP

David Roskelley
R & R Environmental
47 West 9000 South #2
Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 230091-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr
President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 1a1896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number: RES 230091-1
 Client: R & R Environmental
 Client Project Number / P.O.: None Given
 Client Project Description: 3rd West Sub - RMP
 Date Samples Received: February 20, 2012
 Analysis Type: TEM, AHERA
 Turnaround: 24 Hour
 Date Samples Analyzed: February 21, 2012

Client ID Number	Lab ID Number	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
		(mm ²)	(L)		(s/cc)	(s/cc)	(s/mm ²)
3W-021712 SW	EM 866599	0.1000	691	ND	0.0056	BAS	BAS
3W-021712 NW	EM 866600	0.1000	698	ND	0.0055	BAS	BAS
3W-021712 NE	EM 866601	0.1000	687	ND	0.0056	BAS	BAS
3W-021712 SE	EM 866602	0.1000	696	ND	0.0055	BAS	BAS

NA = Not Analyzed
 ND = None Detected
 BAS = Below Analytical Sensitivity
 Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester
 Filter Diameter = 25 mm
 Effective Filter Area = 385 sq mm

Digitally signed by
 Elana Ekman
 DN: cn = Elana
 Ekman, c = US,
 o = Reservoirs
 Environmental,
 vs
 Date: 2012.02.21
 11:02:00 -0700

DATA QA

Due Date: 2-21-12Due Time: 10am

Reservoirs Environmental, Inc.

5801 Logan St. Denver, CO 80216 • P.O. Box 303 964-1988 • Fax 303-477-4278 • Toll Free 866-RES-ENV

Pager: 303-559-2098

 Job # _____
 Page 1 of 1

INVOICE TO: (IF DIFFERENT)

CONTACT INFORMATION:

Company: <u>RE Environmental</u>	Company: _____	Contact: <u>Dave Roskelly</u>	Contact: _____
Address: <u>47 W. 9000S #2</u>	Address: _____	Phone: _____	Phone: _____
<u>Sandy W. 8403</u>		Fax: _____	Fax: _____
		Cell/pager: <u>801 541-1035</u>	Cell/pager: _____
Project Number and/or P.O. #: _____		Final Data Deliverable Email Address: <u>dave@reservoirs.com</u>	
Project Description/Location: <u>32 West Sub - RMP</u>			

ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm		REQUESTED ANALYSIS												VALID MATRIX CODES		LAB NOTES:
PLM / PCM / TEM	_____ RUSH (Same Day) <input checked="" type="checkbox"/> PRIORITY (Next Day) _____ STANDARD	PLM - Shot report, Long report, Point Count TEM - AHERA, Level II, 7402, ISO, +/-, Quant. Semi-quant, Micro-vac, ISO-Indirect Progs PCM - 7400A, 7400B, OSHA DUST - Total, Respirable METALS - Analysis RCRA 8, TCLP, Welding Fume, Metals Scan ORGANICS - METH Salmonella: +/- E. coli O157:H7: +/- Listeria: +/- Aerobic Plate Count: +/- or Quantification E. coli: +/- or Quantification Coliforms: +/- or Quantification Staphylococcus: +/- or Quantification Y & M: +/- or Quantification Mold: +/-, Identification, Quantification	Air = A	Bulk = B												
(Rush PCM = 2hr, TEM = 6hr.)			Dust = D	Paint = P												
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm			Soil = S	Wipe = W												
Metal(s) / Dust	_____ RUSH _____ 24 hr. _____ 3-5 Day		Swab = SW	F = Food												
RCRA 8 / Metals & Welding Fume Scan / TCLP	_____ RUSH _____ 5 day _____ 10 day		Drinking Water = DW	Waste Water = WW												
Organics	_____ 24 hr. _____ 3 day _____ 5 Day	O = Other														
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 5pm		**ASTM E1792 approved w/lo media only**														
E. coli O157:H7, Coliforms, Staphylococcus	_____ 24 hr. _____ 2 Day _____ 3-5 Day	Sample Volume (L) / Area	Matrix Code	Date Collected mm/dd/yy	Time Collected hh/mm a/p	EM Number (Laboratory Use Only)										
Salmonella, Listeria, E. coli, APC, Y & M	_____ 48 Hr. _____ 3-5 Day	# Containers														
Mold	_____ RUSH _____ 24 Hr _____ 48 Hr _____ 3 Day _____ 5 Day															
Turnaround times establish a laboratory priority, subject to laboratory volume and are not guaranteed. Additional fees apply for afterhours, weekends and holidays.																
Special Instructions:																
Client sample ID number (Sample ID's must be unique)																
1	3W-021712 SW	X					691 A	2/17/12		666599						
2	3W-021712 NW						698			666						
3	3W-021712 NE						687			01						
4	3W-021712 SE						696			02						
5																
6																
7																
8																
9																
10																

Number of samples received: 4 (Additional samples shall be listed on attached long form.)

NOTE: REI will analyze incoming samples based upon information received and will not be responsible for errors or omissions in calculations resulting from the use of original data. By signing client/company representative agrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall constitute an analytical services agreement with payment terms of NET 30 days, failure to comply with payment terms may result in a 1.5% monthly interest surcharge.

Relinquished By: <u>Justin P. Kiger</u>	FedEx	Date/Time: <u>2/17/12</u>	Sample Condition: On Ice _____ Sealed _____ Intact _____
Laboratory Use Only			Temp. (F°) _____ Yes / No _____ Yes / No _____ Yes / No _____
Received By: <u>[Signature]</u>	Date/Time: <u>2-20-12 @ 1:00pm</u>	Carrier: <u>FedEx</u>	
Results:	Contact _____ Phone _____ Email _____ Fax _____	Date _____ Time _____ Initials _____	Contact _____ Phone _____ Email _____ Fax _____
	Contact _____ Phone _____ Email _____ Fax _____	Date _____ Time _____ Initials _____	Contact _____ Phone _____ Email _____ Fax _____

7-2011_version 1
 7-2011_version 1

Attachment I

Key to Count Sheets
Count Sheets
Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

A = Amosite
An = Anthophyllite
C = Chrysotile
Cr = Crocidolite
T = Tremolite

Structure Types

F = Fiber
B = Bundle
C = Cluster
M = Matrix

ND = no structures detected
M = other structure associated with a matrix
NAM = Non Asbestos Mineral
XGB = partly obscured by a grid bar

Sizing Conversion

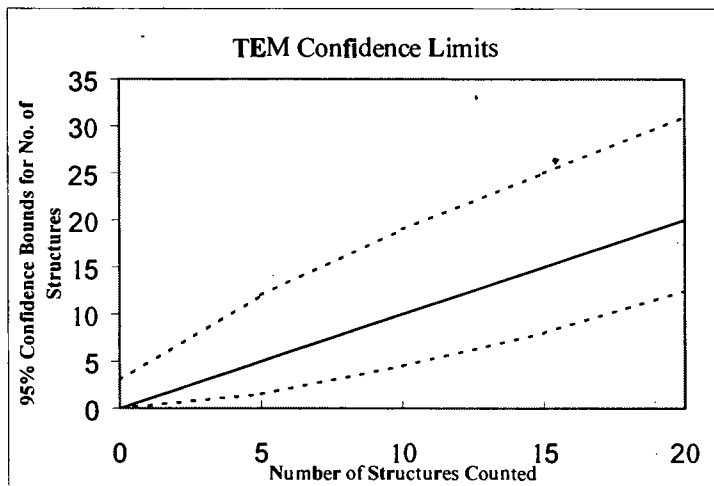
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr
Nathan DelHiero
Angela Heitger
Jonathan Bernard

Paul D. LoScalzo
Mark Steiner
Norberto Zimbleman
Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	691
Date received by lab	2/20/12
Lab Job Number	230091
Lab Sample Number	866519

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JRS
Analysis date	2/21/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AT
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	H5-1	ND												
	G5-1	ND												
	F5-1	ND												
	G5-3	ND												
	F5-3	ND												
B	H6-1	ND												
	H6-1	ND												
	G6-1	ND												
	F6-1	ND												
	E6-1	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

T:\Worksheet in TEM Bench sheet.doc

Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client :	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	6.98
Date received by lab	2/20/12
Lab Job Number:	230071
Lab Sample Number:	866600

Analyzed by	JH
Analysis date	2/21/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K4-4	ND												
	H4-4	ND					Prep A	80% intact			10% debris			
	G4-4	ND					Prep B	60% intact			10% debris			
	F4-4	ND												
	E4-4	ND												
B	L5-1	ND												
	K5-1	ND												
	H5-1	ND												
	G5-1	ND												
	F5-1	ND												

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OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

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Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 μ m
Scale: 1D =	0.056 μ m
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	Rak
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	687
Date received by lab	2/20/12
Lab Job Number	230091
Lab Sample Number	586620

Analyzed by	JRS
Analysis date	2/21/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K2-6	ND												
	H2-6	ND					Prep A 80% content				5-10% debris			
	G2-6	ND					Prep B 60% content				5-10% debris			
	F2-6	ND												
	E2-6	ND												
B	H2-1	ND												
	G2-1	ND												
	F2-1	ND												
	E2-1	ND												
	C2-1	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

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Reservoirs Environmental, Inc.
TEM Asbestos Structure Count

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm ²)	0.011
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm ²)	385
Secondary Filter Area (mm ²)	
QA Type	

Client:	Rek
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm ²)	696
Date received by lab	2/20/12
Lab Job Number:	230091
Lab Sample Number:	5866 5867

F-Factor Calculation (Indirect Preps Only):

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	JRS
Analysis date	2/21/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class			Sketch/Comments	1 = yes, blank = no		
			Primary	Total	Length	Width		Amphibole	C	NAM		Sketch	Photo	EDS
A	K4-3	ND												
	H4-3	ND					Prep A	60% intact			5-10% debris			
	G4-3	ND					Prep B	70% intact			5-10% debris			
	K3-3	ND												
	H3-3	ND												
B	K4-6	ND												
	H4-6	ND												
	G4-6	ND												
	F4-6	ND												
	E4-6	ND												

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

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Analytical Procedures – AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber:	is a structure having a minimum length greater than or equal to 0.5 micron with an aspect ratio of 5:1 or greater with substantially parallel sides.
Bundle:	is a structure composed of three or more fibers in parallel arrangement, with each fiber closer than the diameter of one fiber.
Cluster:	is a structure with fibers in random arrangements such that all fibers are intermixed and no single fiber is isolated from the group.
Matrix:	is a fiber or fibers with one end free and the other end embedded or hidden by a particulate. The exposed fiber end must meet the fiber definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

$$\text{Area Analyzed, mm}^2 = \# \text{ GO counted} \times \text{Average GO Area (mm)}$$

$$\text{Concentration, s/cc} = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2\text{)}}{\text{Average GO area (mm}^2\text{)}} \times \frac{1\text{L}}{1000\text{cc}}$$

$$\text{Filter loading, s/mm}^2 = \frac{\# \text{ Asbestos structures}}{\text{Area Analyzed (mm}^2\text{)}}$$

GO = TEM grid opening